

**UNITED STATES PATENT AND TRADEMARK OFFICE  
BOARD OF PATENT APPEALS AND INTERFERENCES**

Application Ser. No.: 09/621,825

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Inventors: Jung Tae KANG, et al.

Title: LIQUID CRYSTAL DISPLAY AND AN  
INFORMATION PROCESSING APPARATUS  
HAVING THE SAME

Attorney Docket No.: 21ST01634 US

Examiner: Jimmy H. Nguyen

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**APPELLANTS' APPEAL BRIEF**

## **I. Real Party In Interest**

The real party in interest herein is the assignee of this application, Samsung Electronics Co., Ltd., a corporation.

## **II. Related Appeals and Interferences**

There are no other appeals or interferences which will directly affect or be directly affected by or otherwise have a direct bearing on the Board's decision in the pending appeal.

## **III. Status of Claims**

Claims 2-4, 6-8, 10, and 14-17 are canceled.

Claims 1, 5, 9, 11-13, and 18-23 stand rejected.

A listing of the claims and their current status is found in the Appendix included herewith.

The final rejection of Claims 1, 5, 9, 11-13, and 18-23 is appealed.

## **IV. Status of Amendments**

No amendments are pending or submitted with this appeal.

## **V. Summary of Claimed Subject Matter**

This application was filed July 21, 2000, and claims priority and benefits to Korean patent application No. 1999-29529, filed on July 21, 1999.

As described below, the invention provides for a liquid crystal display and an information processing apparatus. In this regard, independent Claims 1, 5, and 18 are provided below in **bold type** with page and line number(s) of the specification (received by the USPTO on July 25, 2003) and drawings indicated in brackets [ ], and further support for the subject matter recited in those claims indicated in parentheses ( ).

**1. A liquid crystal display (LCD), comprising:**

(Figure 1 is a perspective view showing a computer system with an LCD [page 8, line 20]).

**a monitor unit, comprising:**

(Monitor unit 110 has an LCD 300 [page 9, line 2]0.

**a backlight assembly having a light source;**

**an LCD panel arranged on the backlight assembly;**

**a mold frame receiving the backlight assembly and the LCD panel and formed to be gradually thinner as further advancing from a first side adjoining the light source toward a second side opposite the first side; and,**

**a chassis coupled to the mold frame to fix the backlight assembly and the LCD panel therebetween and formed to be gradually thinner as further advancing from a first side adjoining the light source toward a second side opposite the first side;**

(Referring to Figure 2, LCD 300 has a mold frame 310 formed with a receiving space. A backlight assembly 330 is placed within the receiving space of mold frame 310, and generates to guide light. A liquid crystal display panel assembly 350 receives the light and displays the picture. A chassis 370 is coupled to be opposite to the mold frame 310.

Backlight assembly 330 has a light source 332 (page 9, lines 10-16)].

(Mold frame 310 and chassis 370 are formed so that the depth of the receiving space becomes as shallow as light source portion 332 of backlight assembly 330 is further distances from the position of receiving light source portion 332 [page 11, lines 4-6]).

**a frame-shaped reinforcing bracket having a central opening installed on a rear surface of the mold frame;**

(A reinforcing bracket 539 may be installed onto mold frame 538 to firmly fix liquid crystal panel driving circuit 537 and information processing module 540 [page 16, line 22; and page 17, line 1]).

**an information processing module mounted on a rear surface of the mold frame and disposed within the central opening of the reinforcing bracket, the information processing module including a central processing unit generating control signals and a video signal processing unit generating video signals;**

(Referring to Figure 9, information processing module 540 is connected with liquid crystal panel driving circuit 537 is closely coupled to mold frame 538 on the rear plane of liquid crystal display panel 531, together with liquid crystal panel driving circuit 537 while data signal transmission film 535 is bent [page 16, lines 19-22]).

(Referring to Figure 10, information processing module 540 has a central processing unit CPU 541 for generating the control signals, a storing section 542 for storing or outputting data, and a video signal processor 543 for processing video data to supply it to liquid crystal panel driving circuit 537 [page 17, lines 15-18]).

**a printed circuit board (PCB) coupled between the information processing module and the LCD panel, the PCB receiving the video signals from the information processing module and generating and providing a gate driving signal and a data driving signal to the LCD panel; and,**

(An input terminal of data signal transmission film 535 is connected to one end portion of source PCB 536 formed with a wiring pattern for signal transmission. The other end of portion of source PCB 536 is electrically connected with liquid crystal panel driving circuit 537 [page 15, lines 14-19]).

**an input unit provided externally to the monitor unit and connected to the information processing module.**

(An input unit such as a keyboard 600 and mouse 601 may be provided [page 18, line 12]).

**5. An information processing apparatus, comprising:**

**a liquid crystal display (LCD) module, including:**

(Figure 8 shows liquid crystal display module 530 has a liquid crystal display panel 531, gate and data signal transmission films 534 and 535, a source PCB 536 and liquid crystal display panel driving circuit 537 [page 15, lines 3-5]).

**a backlight assembly having a light source;**

**an LCD panel arranged on the backlight assembly;**

**a mold frame receiving the backlight assembly and the LCD panel and formed to be gradually thinner as further advancing from a first side adjoining the light source toward a second side opposite the first side;**

**a chassis coupled to the mold frame to fix the backlight assembly and the LCD panel therebetween and formed to be gradually thinner as further advancing from a first side adjoining the light source toward a second side opposite the first side;**

(Referring to Figure 2, LCD 300 has a mold frame 310 formed with a receiving space. A backlight assembly 330 is placed within the receiving space of mold frame 310, and generates to guide light. A liquid crystal display panel assembly 350 receives the light and displays the picture. A chassis 370 is coupled to be opposite to the mold frame 310. Backlight assembly 330 has a light source 332 (page 9, lines 10-16)].

(Mold frame 310 and chassis 370 are formed so that the depth of the receiving space becomes as shallow as light source portion 332 of backlight assembly 330 is further distances from the position of receiving light source portion 332 [page 11, lines 4-6]).

**an information processing module mounted on a rear surface of the mold frame and disposed in a receiving space defined by a reinforcing bracket located on the rear surface of the mold frame, the information processing module comprising a central processing unit generating control signals and a video signal processing unit generating video signals;**

(Referring to Figure 9, information processing module 540 is connected with liquid crystal panel driving circuit 537 is closely coupled to mold frame 538 on the rear plane of liquid crystal display panel 531, together with liquid crystal panel driving circuit 537 while data signal transmission film 535 is bent [page 16, lines 19-22]).

(Referring to Figure 10, information processing module 540 has a central processing unit CPU 541 for generating the control signals, a storing section 542 for storing or outputting data, and a video signal processor 543 for processing video data to supply it to liquid crystal panel driving circuit 537 [page 17, lines 15-18]).

**a printed circuit board (PCB) coupled between the information processing module and the LCD panel and receiving the video signals from the information processing module and generating and providing a gate driving signal and a data driving signal to the LCD panel; and,**

(An input terminal of data signal transmission film 535 is connected to one end portion of source PCB 536 formed with a wiring pattern for signal transmission. The other

end of portion of source PCB 536 is electrically connected with liquid crystal panel driving circuit 537 [page 15, lines 14-19]).

**an input unit provided externally to the LCD module and connected to the information processing module.**

(An input unit such as a keyboard 600 and mouse 601 may be provided [page 18, line 12]).

**18. A display device, comprising:**

(Figure 1 is a perspective view showing a computer system with an LCD [page 8, line 20]).

**a liquid crystal display (LCD) module, including:**

(Figure 8 shows liquid crystal display module 530 has a liquid crystal display panel 531, gate and data signal transmission films 534 and 535, a source PCB 536 and liquid crystal display panel driving circuit 537 [page 15, lines 3-5]).

**a backlight assembly having a light source and a rear surface;**

**an LCD panel arranged on the backlight assembly;**

**a mold frame receiving the backlight assembly and the LCD panel and extending over substantially the entire rear surface of the backlight assembly; and,**

**a chassis coupled to the mold frame to fix the backlight assembly and the LCD panel therebetween;**

(Referring to Figure 2, LCD 300 has a mold frame 310 formed with a receiving space. A backlight assembly 330 is placed within the receiving space of mold frame 310, and generates to guide light. A liquid crystal display panel assembly 350 receives the light

and displays the picture. A chassis 370 is coupled to be opposite to the mold frame 310. Backlight assembly 330 has a light source 332 (page 9, lines 10-16)].

(Mold frame 310 and chassis 370 are formed so that the depth of the receiving space becomes as shallow as light source portion 332 of backlight assembly 330 is further distances from the position of receiving light source portion 332 [page 11, lines 4-6]).

**an information processing module attached to a rear surface of the mold frame and disposed in a receiving space defined on the rear surface of the mold frame, the information processing module comprising a central processing unit generating control signals and a video signal processing unit generating video signals;**

(Referring to Figure 9, information processing module 540 is connected with liquid crystal panel driving circuit 537 is closely coupled to mold frame 538 on the rear plane of liquid crystal display panel 531, together with liquid crystal panel driving circuit 537 while data signal transmission film 535 is bent [page 16, lines 19-22]).

(Referring to Figure 10, information processing module 540 has a central processing unit CPU 541 for generating the control signals, a storing section 542 for storing or outputting data, and a video signal processor 543 for processing video data to supply it to liquid crystal panel driving circuit 537 [page 17, lines 15-18]).

**a printed circuit board (PCB) coupled between the information processing module and the LCD panel and receiving the video signals from the information processing module and generating and providing a gate driving signal and a data driving signal to the LCD panel; and,**

(An input terminal of data signal transmission film 535 is connected to one end portion of source PCB 536 formed with a wiring pattern for signal transmission. The other

end of portion of source PCB 536 is electrically connected with liquid crystal panel driving circuit 537 [page 15, lines 14-19]).

**an input unit provided externally to the LCD module and connected to the information processing module.**

(An input unit such as a keyboard 600 and mouse 601 may be provided [page 18, line 12]).

#### **VI. Grounds of Rejection to Be Reviewed on Appeal**

Whether, under 35 U.S.C. §103(a), Claims 1, 5, 9, 11-13, and 18-23 are unpatentable over Yun et al. (U.S. Patent No. 5,835,139), herein referred to “Yun”, in view of Murai (U.S. Patent No. 5,986,726), and further in view of Williamson et al. (U.S. Patent No. 5,475,381), herein referred to as “Williamson”.

#### **VII. Argument**

Of the above-referenced claims, Claims 1, 5, and 18 are independent. Accordingly, once patentability of these claims is established, all claims depending therefrom are likewise patentable.

**Claims 1 and 5** recite in part, “an information processing module mounted on a rear surface of the mold frame, the information processing including a central processing unit generating control signals and a video signal processing unit generating video signals, . . . an input unit provided externally to the monitor unit and connected to the information processing unit”. **Claim 18** recites similar subject matter.

In rejecting the independent claims, the Examiner indicated that Yun discloses an information (a driving circuit board 23) inherently including a video signal processing unit

for generating video signals and for providing video signals to the liquid crystal panel via a flexible film (page 3 of the Office Action).

The Examiner then relies on Murai to disclose an information processing module mounted on a rear surface of the mold frame, as recited in Claims 1 and 5, as well as an information processing module attached to the rear surface of the mold frame and disposed in the receiving space defined by the rear surface of the mold frame, as recited in Claim 18 (page 5 of the Office Action).

The Examiner further cites Williamson as disclosing the central processing unit is comprised in the information processing unit as recited in Claims 1, 5, and 18. The Examiner finally concludes that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize Williamson's teaching above in the information processing apparatus of Yun.

Applicants respectfully disagree.

Yun, as well as Munai, merely indicate the presence of a driving circuit board 23 and 4 (column 2, lines 18-20 of Yun) and (column 4, lines 1-4 of Munai). There is no teaching or suggestion anywhere in either reference that such a driver circuit constitutes or comprises an information processing module comprising a central processing unit generating control signals or a video signal processing unit generating video signals. Indeed, since both references relate to portable or "laptop" computers, it is respectfully submitted that both the CPU and the video processor of both references conventionally reside in the main body, e.g., keyboard, of the device (see Background on page 2, lines 2-5 of Applicants' originally filed application). As such, Applicants respectfully submit that the driving circuit boards of Yun

and Munai do not correspond to the information processing module of the present invention,  
but corresponds to the printed circuit board (PCB) of the present invention.

Yun and Murai relate to a conventional liquid crystal display device. As such, Yun and Murai are non-analogous to Applicants' liquid crystal device that includes an information processing module. Furthermore, Applicants' mold frame and chassis are provided to form a space for receiving the information processing module. In this regard, there is no suggestion or reasonable expectation to modify Yun or Murai to obtain the technical features as claimed Applicants.

In contrast to Yun and Murai, Williamson relates to a special purpose "handheld computer" in the nature of a "personal digital assistant" (PDA). In this regard, Williamson arguably discloses a device having a LCD and a central processing unit disposed within the same casing.

Contrary to the Examiner's assertion that "it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize Williamson's teaching above in the information processing apparatus of Yun, i.e., locating the Yun central processing unit in the Yun information processing unit, because this would fit all the elements in the same casing, thereby reducing the size of the apparatus, which is small enough to fit into a pocket, as taught by Williamson" [emphasis added (bottom of page 6 and top of page 7 of the Office Action)], Applicants respectfully submit there is no such suggestion or motivation to combine the teaching of Yun, Munai, and Williamson to arrive at Applicants' claimed invention.

In this regard, as indicated above, Applicants' claimed subject matter includes "an input unit provided **externally** to the monitor unit and connected to the information

processing unit” (emphasis added). As such, Applicants claimed subject matter relates, not to a handheld device, such as Williamson’s PDA, but to portable or laptop computers that conventionally include an externally or rotatably attached main body or input device such a keyboard. “[F]itting all the elements in the same case, thereby reducing the size of the apparatus, which is small enough to fit into a pocket” is not an objective of Applicants’ claimed subject matter. Actually, combining the information processing unit of Williamson within the device of Yun would result, as occurred in Applicants’ LCD, in an increase in thickness (page 17, line 20 of Applicants’ originally filed application). The only motivation to combine Yun, which relates to portable or laptop device, with Williamson, which relates to handheld devices, is gleaned from impermissible hindsight.

As disclosed by Applicants, “Once information processing module 540 is accommodated within the interior of LCD 500 as described above, it is advantageous in that the space having been occupied by the main body of the computer system can be utilized for another use when the main body of the computer system and monitor unit are separately formed” (page 17, lines 20-24 of Applicants’ originally filed application). As such, one novel and nonobvious aspect of Applicants’ claimed subject matter is that the main body and monitor unit remain as separate items, connected electrically, while taking the information processing unit from the main body and locating it in the monitor unit thus creating space within the main body for “other uses”. In this regard, the vagueness of “other uses” implies Applicants’ motivation for locating the information processing unit in the monitor was simply because space was available in the monitor. Such a relocation of the information processing unit into the monitor without a foreseeable use for the space made

available in the main body only supports a lack of suggestion or motivation in combining the Yun and Williamson references.

Accordingly, Applicants respectfully submit that without the use of Applicants' specification as a "blueprint" there is no suggestion, teaching, or motivation to combine Yun, Munai, and Williamson to arrive at Applicants' claimed subject matter

WHEREFORE, in light of the above and other good and sufficient reasons, the Applicants-Appellants respectfully request that the Honorable Board reverse the decision of the Examiner with respect to the rejections of Claims 1, 5, 9, 11-13, and 18-23 and hold these claims allowable over the art of record.

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## VIII. CLAIMS APPENDIX

### CLAIMS:

1. (previously presented) A liquid crystal display (LCD), comprising:  
a monitor unit, comprising:
  - a backlight assembly having a light source;
  - an LCD panel arranged on the backlight assembly;
  - a mold frame receiving the backlight assembly and the LCD panel and formed to be gradually thinner as further advancing from a first side adjoining the light source toward a second side opposite the first side; and,
  - a chassis coupled to the mold frame to fix the backlight assembly and the LCD panel therebetween and formed to be gradually thinner as further advancing from a first side adjoining the light source toward a second side opposite the first side;
  - a frame-shaped reinforcing bracket having a central opening installed on a rear surface of the mold frame;
  - an information processing module mounted on a rear surface of the mold frame and disposed within the central opening of the reinforcing bracket, the information processing module including a central processing unit generating control signals and a video signal processing unit generating video signals;
  - a printed circuit board (PCB) coupled between the information processing module and the LCD panel, the PCB receiving the video signals from the information processing module and generating and providing a gate driving signal and a data driving signal to the LCD panel; and,
  - an input unit provided externally to the monitor unit and connected to the information processing module.
  
2. – 4. (cancelled)

5. (previously presented) An information processing apparatus, comprising:  
a liquid crystal display (LCD) module, including:  
a backlight assembly having a light source;  
an LCD panel arranged on the backlight assembly;  
a mold frame receiving the backlight assembly and the LCD panel and formed to be gradually thinner as further advancing from a first side adjoining the light source toward a second side opposite the first side;  
a chassis coupled to the mold frame to fix the backlight assembly and the LCD panel therebetween and formed to be gradually thinner as further advancing from a first side adjoining the light source toward a second side opposite the first side;  
an information processing module mounted on a rear surface of the mold frame and disposed in a receiving space defined by a reinforcing bracket located on the rear surface of the mold frame, the information processing module comprising a central processing unit generating control signals and a video signal processing unit generating video signals;  
a printed circuit board (PCB) coupled between the information processing module and the LCD panel and receiving the video signals from the information processing module and generating and providing a gate driving signal and a data driving signal to the LCD panel; and,  
an input unit provided externally to the LCD module and connected to the information processing module.

6. – 8. (canceled)

9. (previously presented) The information processing apparatus of claim 5, wherein the information processing module further comprises data storage that stores or supplies data in response to the control signals from the central processing unit.

10. (canceled)

11. (previously presented) The information processing apparatus of claim 9, further comprising a front case and a rear case coupled to the front case, wherein the backlight assembly, the LCD panel, the mold frame, the chassis and the information processing module are fixed between the front case and the rear case.

12. (previously presented) The information processing apparatus of claim 9, wherein the data storage comprises at least one selected from the group consisting of ROM, RAM, a hard disc drive and an optical disc.

13. (previously presented) The information processing apparatus of claim 9, wherein the information processing module further comprises:

- an interfacing unit connected to the input unit;
- a sound control unit that plays and records sound; and,
- a communicating unit that performs communication with an external device.

14. – 17. (canceled)

18. (previously presented) A display device, comprising:

a liquid crystal display (LCD) module, including:

- a backlight assembly having a light source and a rear surface;
- an LCD panel arranged on the backlight assembly;
- a mold frame receiving the backlight assembly and the LCD panel and extending over substantially the entire rear surface of the backlight assembly; and,
- a chassis coupled to the mold frame to fix the backlight assembly and the LCD panel therebetween;

an information processing module attached to a rear surface of the mold frame and disposed in a receiving space defined on the rear surface of the mold frame, the information processing module comprising a central processing unit generating control signals and a video signal processing unit generating video signals;

a printed circuit board (PCB) coupled between the information processing module and the LCD panel and receiving the video signals from the information processing

module and generating and providing a gate driving signal and a data driving signal to the LCD panel; and,  
an input unit provided externally to the LCD module and connected to the information processing module.

19. (previously presented) The display device of claim 18, further comprising a front case and a rear case coupled to the front case, wherein the backlight assembly, the LCD panel, the PCB, the mold frame, the chassis and the information processing module are fixed between the front case and the rear case.

20. (previously presented) The display device of claim 18, wherein the information processing module further comprises data storage that stores and supplies data in response to the control signals from the central processing unit.

21. (previously presented) The display device of claim 20, wherein the data storage comprises at least one selected from the group consisting of ROM, RAM, a hard disc drive and an optical disc.

22. (previously presented) The display device of claim 20, wherein the information processing module further comprises:  
an interfacing unit connected to the input unit;  
a sound control unit that plays and records sound; and,  
a communicating unit that performs communication with an external device.

23. (previously presented) The LCD of claim 1, wherein the information processing module further comprises data storage that stores and supplies data in response to the control signal from the central processing unit.

## **IX. Evidence Appendix**

No evidence was submitted pursuant to 37 CFR 1.130, 1.131, or 1.132.

## **X. Related Proceeding Appendix**

There are no related proceedings.